

REMARKS

Rejection Under 35 U.S.C. § 103(a)

In the final Office Action mailed December 13, 2007, claims 1, 6-11, 13, and 15-25 have been rejected for alleged obviousness over U.S. Pat. No. 4,874,480 to Sonoda, *et al.* ("the Sonoda patent") in view of U.S. Pat. No. 3,619,300 to Heller, *et al.* ("the Heller patent"). Applicants respectfully disagree and request review at least because one skilled in the art would not be motivated, and would in fact be discouraged, from combining the cited references.

As indicated previously, the presently claimed invention relates to a nonsludging zinc phosphate treatment liquid composition used for the formation of zinc phosphate coatings on metal surfaces. Specifically, Applicants have discovered through intensive research that by controlling the specific proportional relationship between the zinc concentration and the concentrations of phosphoric acid, nitric acid, cations, and anions in a zinc phosphate treatment liquid composition, they can obtain compositions having the benefit of being nonsludging. Because of the number of variables and their changeability (depending upon their respective concentrations), the relationship is quite complex and is best demonstrated by the recited mathematical condition(s).

The Office contends that because the Sonoda patent allegedly does not teach the amount of nitric acid that should be used in the disclosed titanium coating solution, one of ordinary skill would turn to the Heller patent and refer to its disclosure regarding the concentration of nitric acid (12/13/07 Action at page 5). However, the Office's contention overlooks a number of important facts that undermine the argument that one skilled in the art would be motivated to combine the teachings of the Sonoda patent with those of the Heller patent.

First, to the extent that the Office argues that the Sonoda patent does not already inform one skilled in the art as to the appropriate concentration of nitric acid in the titanium coating solution, this position is at the outset incorrect – Example 1 of the Sonoda patent is said to be an exemplary embodiment and clearly discloses that nitric acid may be present in the titanium coating solution in the amount of 2 g/L (*see* Sonoda patent at col. 4, lines 45-60). Accordingly, the Sonoda patent provides a complete disclosure as to the characteristics of a titanium coating solution that produces an acceptable electrolytic coating, and therefore, contrary to the Examiner's assertion, one skilled in the art would not be induced to seek additional guidance as to the concentration of the nitric acid component, especially in view of the fact that the Sonoda

patent discloses that the described embodiment produces an electrolytic coating without sludge accumulation. The Examiner's basic rationale for combining the teachings of the Sonoda patent with those of the Heller patent is not consistent with the actual content of the Sonoda patent when considered as a whole, and cannot support a proper *prima facie* case of obviousness. See *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5 (Fed. Cir. 1986) (prior art reference must be considered as a whole and must suggest the desirability of making the combination).

Second, assuming *arguendo* (a point that Applicants do not concede) that one skilled in the art would look beyond the disclosure of the Sonoda patent for guidance as to the appropriate concentration of nitric acid for the disclosed titanium coating solution, a more complete reading of the Heller patent than that proposed by the Office reveals that one skilled in the art would not view the Heller patent's disclosure regarding acceptable ratios of nitrate ions to phosphate ions as applicable to the electrolytic titanium coating process of the Sonoda patent.

The Heller patent is directed to "conversion coatings on substrates comprised of aluminum or its alloys and zinc or iron" (col. 2, lines 15-17), and to this end clearly provides that the disclosed solutions contain "as essential ingredients [each of] zinc ion, phosphate ion, nitrite ion, nitrate ion, fluoride ion and both sodium and potassium ions" (col. 2, lines 57-59). The Office has not presented evidence or reasoning demonstrating that one skilled in the art, when considering the Heller patent as a whole, would view the Heller patent's disclosure regarding acceptable concentrations of nitrate ions in isolation from the other aspects of the Heller patent, which are specifically tailored for the process of providing coatings for "substrates comprised of aluminum or its alloys and zinc or iron."

For example, the Heller patent provides that "zinc ion, phosphate ion, nitrite ion, nitrate ion, fluoride ion and both sodium and potassium ions" must be included in any coating solution as "essential ingredients" (col. 2, lines 57-59), and that "the nitrate, nitrite and fluoride components are especially important to the success of the process" (col. 3, lines 9-10). The Office has presented no evidence or reasoning to demonstrate that one skilled in the art would apply one of the conditions set forth in the Heller patent – namely, the ratio of nitrate to phosphate – to the Sonoda patent while ignoring the other conditions in the Heller patent, including those that are said to be "essential." The mere fact that isolated aspects of the Heller patent *can* be selected for combination with the Sonoda publication does not alone provide the grounds for a rejection for *prima facie* obviousness. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990)

(mere fact that reference can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination).

In the present instance, the Heller patent describes the ratio of nitrate to phosphate as being desirable in the context of providing coatings for “substrates comprised of aluminum or its alloys and zinc or iron” in which “zinc ion, phosphate ion, nitrite ion, nitrate ion, fluoride ion and both sodium and potassium ions” are essential components. The Heller patent does not teach or suggest that it would be desirable to use the disclosed ratio of nitrate to phosphate in contexts that do not involve the “essential” conditions described in the Heller patent, including the context of the Sonoda patent, which is directed to an electrolytic coating process for a different substrate material, under different chemical conditions, and having different chemical requirements.

For example, *inter alia*, the Heller patent, unlike the Sonoda patent, does not concern cathodic electrolysis of titanium-based substrates; as one skilled in the art would understand, the use of cathodic electrolysis requires different chemical conditions than those used in non-electrolytic coating processes, and furthermore, the use of titanium-based metals present different problems and require different conditions than may be used for other substrates, such as steel (*see, e.g.*, Sonoda patent at col. 3, lines 46-52). Also, unlike the solutions of the Heller patent, the conversion coating solutions of the Sonoda patent do not involve the use of nitrite ions, fluoride ions, or potassium ions.

Moreover, the respective problems addressed by the Sonoda patent and the Heller patent are different, and the conditions respectively prescribed by each are particularly adapted for solving these different problems. The Sonoda patent describes processes that solve the problems of insufficient lubricity and seizure during cold working of titanium-based metals, as distinguished from other metal substrates (Sonoda patent at col. 1, lines 6-12). The Heller patent is concerned with providing non-sludging zinc phosphate conversion coatings on aluminum, zinc, and iron alloys (*see* Heller patent at col. 1, lines 5-36). In further contrast with the Heller patent, the Sonoda patent specifically observes that sludging is *not* a problem when using the disclosed electrolytic coating solutions (Sonoda patent at col. 4, lines 34-41). Accordingly, one skilled in the art would not modify the Sonoda patent by reference to the Heller patent, at least because one skilled in the art would not consider the conditions described by the Heller patent, which solves a problem that is already mooted by the conditions of the Sonoda patent, as applicable to the Sonoda patent, which solves an entirely distinct set of problems and does so under a set of chemical conditions that is unique to the parameters of that patent.

In addition, the Sonoda patent specifically teaches that certain of the conditions that are described as “essential” in the Heller patent would *not* be desirable for use with the titanium/titanium alloy electrolytic conversion coating solutions of the Sonoda patent. For example, while the Heller patent (1) lists fluoride ions among the “essential” components (col. 2, lines 57-59); (2) provides that the fluoride component is “especially important to the success of the process” (col. 3, lines 9-10); and (3) effectively teaches that the fluoride component is not relevant to the coating of non-aluminum substrates¹, the Sonoda patent specifically discusses the disadvantages of using fluoride conversion films for titanium and titanium alloy coating processes (*see* Sonoda patent at col. 1, lines 60-64) (“When fluoride-based conversion films . . . are used . . . , there is a serious drawback in connection with the short life of the processing solution.”). By itself, this distinction between the Heller patent and the Sonoda patent serves to undermine the Office’s contention that it would be appropriate (technologically and from the perspective of a skilled artisan who has read the entire contents of the cited references) to combine the teachings of the Heller patent with those of the Sonoda patent. *See, e.g., In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984) (if a proposed modification renders the prior art invention being modified unsatisfactory for its intended purpose, there is no suggestion or motivation to make the proposed modification).

¹ See Heller patent at col. 8, lines 49-51 (“The purpose of the fluoride salt is to combine with the free aluminum dissolved during the coating process and remove it from the solution as Na₃AlF₆”) & col. 2, lines 39-42 (“Fluoride ion is added as alkali metal bifluorides of sodium and potassium whereby the undesirable aluminum ion is readily removed from solution as a dense precipitate of K₃NaAlF₆”).

In sum, the Office fails to provide sufficient reasoning or evidence to demonstrate the desirability of importing the aspect of the Heller patent that concerns the proportion of nitrate ions to phosphate ions into the distinct conditions of the Sonoda patent, and ignores those reasons that would actually *discourage* one skilled in the art from doing so. The Office's argument therefore falls far short of the burden required for presenting a proper *prima facie* case of obviousness, and for at least these reasons, the rejection of claim 1 and its dependents under § 103(a) should be withdrawn.

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